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FIELD INSTRUCTIONS FOR FARMERS' COOPERATIVE DEMONSTRATION WORK.

In the Farmers' Cooperative Demonstration Work great stress is laid upon a more thorough preparation of the soil in the autumn, because in our southern climate the frosts do not penetrate the soils sufficiently to open them and admit air. We must therefore do by plowing in the fall and by some winter cultivation what nature does in the colder North.

In the richest soils there is but little food ready prepared for the plant, and nature's plan is that this food shall be prepared more or less daily by the action of the air, the moisture in the soil, and the sun.

These three active forces cause the food to be prepared so that the plant can be properly nourished. This can not be done without plowing and cultivating to admit the air, and the earlier this work is commenced in the fall the greater the effect it will have upon the crop of the following season.

The effect of using good seed is not sufficiently appreciated, nor perhaps is it understood just what makes good seed. It must be the best variety, carefully selected early in the fall and stored in a dry place.

Young plants require excellent cultivation, just as young animals require the best food and care.

The judicious use of commercial fertilizer is one of the most important matters in modern agriculture, for it furnishes plant food directly and indirectly to the young plants.

The most important factor relating to the permanent fertility of the soil is the abundant and judicious use of all the animal and vegetable matter that may be found on every farm, such as barnyard manure, leaf mold, and green crops. For soil building we must largely depend upon barnyard manure, the compost heap, and leguminous plants, such as cowpeas.

THE COTTON CROP.

FALL PREPARATION OF THE FIELD.

For the best results the field should be plowed in the early fall or winter, not later than the 1st to the 10th of January, and earlier if possible.

If the farmer uses an ordinary plow, then the fall plowing (breaking) should be 1 or 2 inches deeper than usual and the furrows should be set on edge. If a disk plow can be secured, use it and plow as deep as

possible—the deeper the better. In case a disk plow can not be obtained, use a subsoil plow after breaking. Following the breaking plow with a narrower plow in the same furrow is better than not to secure depth in plowing, but this is not equal to the use of the disk plow or the subsoil plow. It is not advisable to throw a large quantity of cold subsoil to the surface at one time. Afterwards, during the autumn and winter, the field should be disked or plowed 3½ to 4 inches deep every three weeks, being governed by soil conditions. It is not well to stir land when it is too wet.

If no fall or winter plowing has been done, plow without delay about 1 inch deeper than usual and run narrow furrows to set well on edge.

Disk or plow again before planting. Tillage is manure. The soil gets air by stirring, and plant food which would otherwise not be used by the growing crop becomes available.

Most plants first throw out their feeding roots in the warm surface soil if finely pulverized, and it is best, therefore, immediately before planting, to use a tooth or disk harrow, shallower than the plowing.

Time spent in making a good seed bed is not wasted. Go over the field several times with the harrow if necessary. Use the tooth harrow again after planting cotton and corn and also after the plants are up a few inches. If inclined to pack, work the plants two or three times with the tooth harrow.

Plant as early as is safe from frost. The actual date of planting depends on locality. The important point is to plant as early as the weather and soil conditions permit.

SPACING AND CULTIVATION.

With rich soil more space will be required between the rows; with thinner soil, less.

The general rule for spacing rows is that the distance between the rows shall be a little more than the height of the cotton on the land in average years. Where cotton usually grows 2 or 3 feet high the rows should be from 3½ to 4 feet apart. Where cotton normally grows about 3½ feet high plant in rows 4 feet apart. Where it grows 4 or 5 feet high put the rows 5 feet apart. It is better to have the spaces between the rows a little too wide than too narrow. Air and sunlight are of the greatest importance in pushing the crop to maturity.

On very fertile and strong lands there should be a good distance between the cotton rows, but the plants may be slightly crowded in the rows with good results, though not less than 15 inches space between plants should be given.

Plant early-maturing varieties of cotton. Some large-boll varieties are even better than the small-boll cottons under weevil conditions because of a thicker calyx, and consequently the half-grown bolls are less likely to be punctured by the weevil.

If fertilizers are used, the following general rule should govern: On rich lands use mainly fertilizers that will stimulate the fruit and not the stalk growth. On lighter lands use more of the elements to force growth, combined with others which will mature the fruit.

High-grade 14 per cent acid phosphate may be considered a basis for increasing fruit and hastening maturity of crops. Even on the richest land it has been demonstrated that a small percentage of nitrogen added to the acid phosphate gives better results. Mix 3 parts of acid phosphate and 1 part of cotton-seed meal. This we will call "No. 1."

A mixture of 1 part of cotton-seed meal to 2 parts of high-grade acid phosphate will greatly increase the growing condition and will be better for medium soils. This we will call "No. 2."

Air-slaked lime is of value for use on stiff or gummy soils to loosen them up, permit the air to enter, and prevent a sour condition of such soils when too wet.

On thin or impoverished soils equal quantities of cotton-seed meal and acid phosphate can be used to advantage. This is "No. 3."

In case the foregoing can not be obtained, standard-grade commercial fertilizers may be used. These should contain in the mixture 8 to 10 per cent of available phosphoric acid, 2 to 3 per cent of nitrogen, and 1½ to 2 per cent of potash, or on some lands a high-grade acid phosphate, 14 per cent, may be used.

On black waxy land the best practice is to have the cotton follow a crop of cowpeas.

Where lands are greatly worn by years of cropping, more fertilizer should be used to the acre and it should contain about equal parts of cotton-seed meal and high-grade acid phosphate. The beneficial effect of commercial fertilizers depends largely upon the presence of humus in the soil; hence the importance of using stable manure and plowing under green crops.

In applying the foregoing instructions the farmer must use considerable judgment and modify his practice where necessary to fit local conditions.

HOW TO APPLY THE FERTILIZER AFTER THE SOIL HAS BEEN THOROUGHLY PULVERIZED.

In the absence of a good machine apply the fertilizer as follows:

Mark out the rows or bed up,[1] spacing as before stated, and distribute the fertilizer in rows. Follow after with a shallow bull-tongue, or scooter, to thoroughly mix the fertilizer with the soil. The fertilizer

[1] Bedding up land is a precaution against a heavy rainfall after planting. In sections where there is no danger from excessive moisture, flat planting is preferred, and in some cases it may be necessary to plant a few inches below the surface. Seeds must have moisture, but they must be kept out of standing water in the soil.

should be distributed several days before planting, as there is danger of injuring the seed if brought in immediate contact with strong fertilizer. A very careful mixing of the fertilizer with the soil is necessary for the same reason. On all except very rich black waxy lands, it will pay to use commercial fertilizers somewhat liberally.

Where lime is used scatter it broadcast when the land is plowed, using about 4 barrels of air-slaked lime per acre, or apply in the row about 2 barrels per acre a short time before planting, mixing it thoroughly with the soil.

Use a tooth harrow thoroughly before and after planting.

Begin cultivation as soon as the cotton is up. A smoothing harrow will do splendid work to loosen the surface soil at this time.

Let the first cultivation after the harrow be deep, the later cultivations shallow.

Cultivating every seven to ten days, weather and soil conditions permitting, will be best. A narrow-winged sweep answers the best purpose for the shallow cultivations. Allow the dirt to fall loosely over it, making a good mulch. It should be run about 1½ inches deep.

It is usually best to chop cotton twice, leaving it thicker at first than necessary and afterwards thinning to the proper stand for the soil. It is safer to thin twice than it is to chop to a stand at the start. The distance of plants in the rows, however, must be determined by the usual growth of plants on such soil.

On rich, strong, moist lands, like alluvial bottoms, it is generally advisable to run a plow close to the plants on each side of the row (bar off) while the plants are not over 8 to 10 inches tall.

If the plants grow tall and slender later, cut the tops when about 2½ feet high, thus forcing the growth out lower down the stalk.

MEASURES NECESSARY UNDER BOLL-WEEVIL CONDITIONS.

As early as possible in the fall after the cotton crop has been gathered, destroy all the immature bolls. Cattle may be turned in or the bolls may be gathered and burned. The stalks can then be cut and plowed under. In sections where there is a light rainfall it is probably better to burn stalks as well as bolls. In the cotton-producing States east of the Brazos River, Texas, there is generally enough rainfall in the winter for the complete saturation of the soil, and if the stalks are cut and plowed under thoroughly in the fall few weevils will survive for spring depredations. Burn all grass and rubbish on the borders of the field before breaking.

When squares begin to drop from the plant, it may be due either to the weevil or to other insects, or possibly to other conditions. In any case it is well to collect and burn all the squares that drop for at least the first month after blooming commences, and it will be wise to con-

tinue this for a longer period. A good many weevils will thus be destroyed. Under ordinary conditions fertilizing assists in holding the squares.

PRACTICE TO BE FOLLOWED AS SOON AS THE COTTON PLANTS BEGIN TO FORM SQUARES.

Look for the boll weevil and other injurious insects.

All cultivation from this time must be shallow. Deep cultivation will cause more or less injury.

Continue the cultivation as late as possible, being governed by the size of the plant. Cultivate later in dry than in wet seasons.

If the boll weevil appears, attach a smooth pole or brush to the cultivator or the whiffletree in such a way as to strike the cotton plants and knock off the punctured squares. This, with the picking up of the squares, is of great service.

Where boll weevils are abundant on early cotton use the tooth harrow while the plants are small, driving diagonally across the rows, and later use brush attached to the cultivator. Frequently three rows are brushed at once. Do this once in three days if necessary. Both the harrow and the brushing force the weevils to fall upon the hot soil, which soon kills them.

THE CORN CROP.

The average yield of corn per acre in the Southern States is very low. These averages are typical of conditions prevailing in the Gulf and South Atlantic States and show that the corn crop on an average scarcely pays the cost of production. This condition is the more humiliating because it is totally unnecessary. Under a good system of farming the corn crop of these States should show an increase of 300 per cent.

HOW THE CROP CAN BE INCREASED.

Improve the condition and fertility of the soil by rotation of crops, by planting cowpeas or other legumes, or by the use of stable manure or compost. Corn requires a deep and thoroughly pulverized seed bed.

For the best results the seed bed should be not less than 10 inches deep, and in most soils much deeper. This can be secured at once by using a disk plow followed by a subsoil plow, or a common turning plow followed by a subsoil plow.

Harrow occasionally to keep the soil in good tilth and free from weeds.

Where the land does not allow of fall plowing, break as early as possible in the spring.

Plant only the best selected seed, such as will produce uniform ears of excellent quality and a large crop.

Plant as early as practicable in rows 4 feet apart on well-drained sandy loam soils, and plant cowpeas between the rows at the time the corn is cultivated last. One inch is sufficient depth to plant in well-pulverized moist soil when the weather is warm. Soils and conditions are so variable that the farmer must use his judgment as to the depth of planting.

Harrow corn before and after planting to prevent the formation of a soil crust. Then give shallow cultivation once in ten days, and always after a rain, until it is time to lay by. Deep cultivation or plowing is injurious after the corn is 8 inches tall. For cultivation a sweep is better than a plow. Plow the middles deep when the corn is about 8 inches tall, and keep them well worked.

Thin before the corn is 8 inches tall to a single stalk 15 inches in the row when there is high fertilization, intensive cultivation, and the soil is good. When the corn is on land long in cultivation and but little fertilizer is used, 2 feet in the row will be nearer right. On very rich soil properly prepared and tilled and progressively fertilized, the stalks may stand singly a foot apart in the row. Here the farmer must use his judgment, but if a large crop of corn is expected there must be a good stand and more stalks left in the row than usual. The thicker stand is supported by better cultivation and fertilizing.

On rich lands and on post-oak lands nearly level and where the rainfall is heavy, corn rows should be 5 to 6 feet apart and cowpeas should be planted on the side at the time of laying by.

When the ears begin to set pull the tassel out of all weak stalks showing no ears or only nubbins. This will increase the yield and should be done whether it is the intention to save any of the field for seed or not.

Select the seed with care, and store it in a dry place. Seed from a crib or seed selected from corn left on the stalk till late in the fall or winter is not desirable.

It pays to use commercial fertilizers on corn. The corn crop requires more nitrogen than cotton. It should be fertilized liberally. The kind of fertilizer used, the quantity, and the time of application must be determined by the soil, climate, season, and other conditions and can not be stated in any general rule. In fact, all the foregoing directions are subject to some modification to meet conditions of climate, soil, season, etc. Generally a fertilizer that analyzes 9 to 10 per cent of phosphoric acid, 3 per cent of nitrogen, and 2 per cent of potash does well for corn. Well-rotted stable manure is good and produces better results if applied in the winter, so as to become incorporated with the soil.

The six items to be emphasized in making a corn crop are the following: (1) Good drainage; (2) soil preparation; (3) selection of

seed; (4) excellent cultivation; (5) fertilization; (6) removing the tassels from bastard and inferior stalks.

A good corn crop is a basis of prosperity and ranks next to a good cotton crop.

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Approved:
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